

MISSOURI STATE HIGHWAY DEPARTMENT

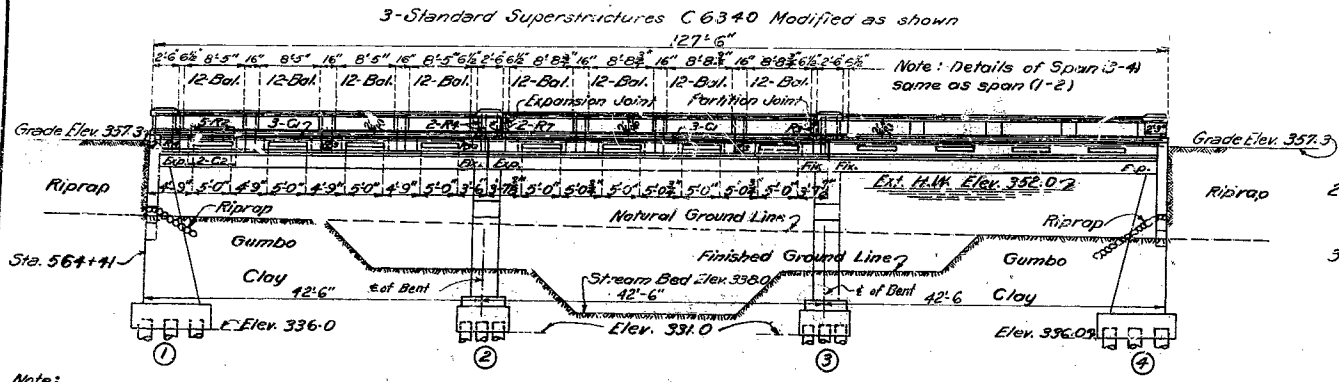
NAME PLATES

Two name plates, type "A", as shown on Std. S818, to be furnished and placed by contractor. Cost of name plates to be included in price bid for other items.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	R46-56	19		

BILL OF REINFORCING STEEL

No.	SIZE	LENGTH	MARK	BENDING SKETCHES
24	3/8"	52.3'	D2	
16	3/8"	9.6'	F2	
16	3/8"	9.3'	F3	
40	1/2"	24.9'	G1	
4	1/2"	24.9'	G2	
16	3/8"	6.6'	D2	
12	3/8"	17.6'	M1	
4	3/8"	16.9'	M2	
6	3/8"	29.9'	H2	
12	3/8"	22.9'	H4	
10	3/8"	22.8'	H6	
4	3/8"	22.9'	H6	
16	3/8"	22.9'	H2	
16	3/8"	19.0'	F2	
44	1/2"	10.0'	F2	
8	3/8"	18.9'	F2	
12	3/8"	15.3'	F2	
34	1/2"	11.6'	U1	
12	1/2"	9.6'	V1	
8	3/8"	18.3'	U1	
52	1/2"	11.0'	U2	
6	3/8"	22.9'	T2	
120	1/2"	9.9'	R2	
48	1/2"	9.3'	R2	
32	1/2"	4.0'	R2	
1152	1/2"	11.0'	R2	
32	1/2"	22.9'	R1	
8	1/2"	2.3'	R2	
16	1/2"	20.9'	R1	
36	1/2"	22.6'	C1	
32	1/2"	24.3'	C2	
61	3/8"	25.5'	S2	

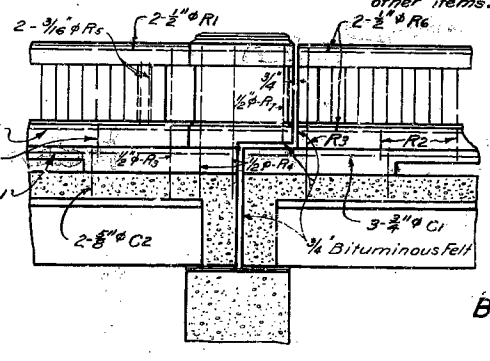
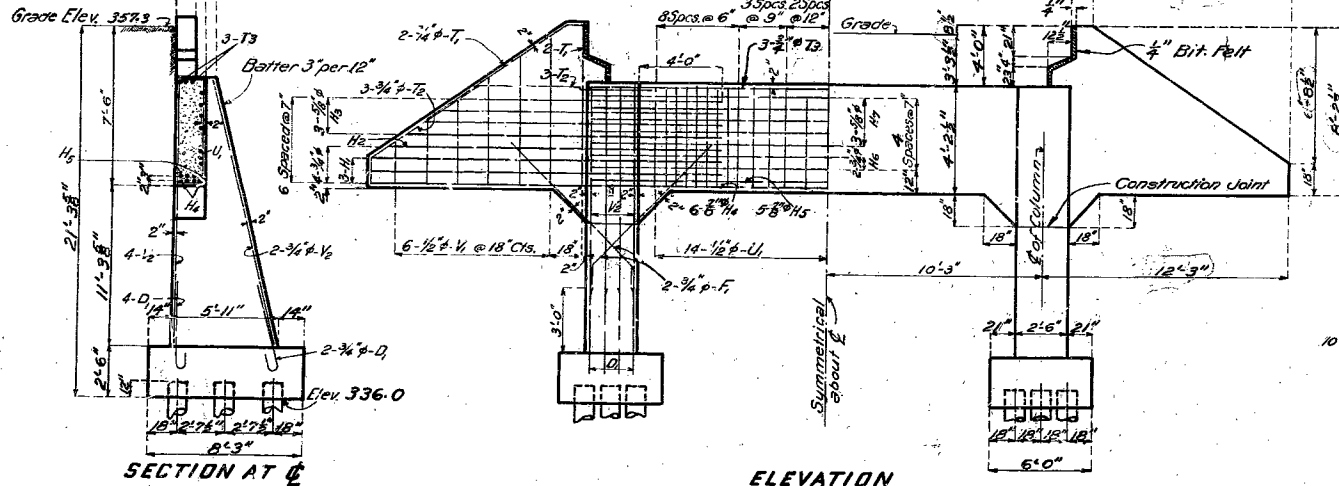


Note:
All piling to be plain timber piles 15'-0" long. No piling to be ordered until authorized by Engineer in writing. Channel to be cleared above and below site approximately as shown on Road Plans. Stream banks to be maintained during construction or replaced to natural position.

GENERAL ELEVATION

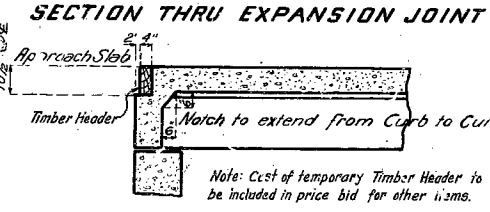


HALF ANCHOR BOLT PLAN



BEARING PLATES-BOLTS REQ

8-Pls. 2'-6" x 17" Placed to 2" thickness
32-Pls. 15" x 17" Placed to 2" thickness
18-3/4" x 12" Bolts - Sp. Nuts - C&K Hds.
18-3/4" x 12" Bolts - 16 Threads or Nuts
12-Copper Pins 15" 17" gauge for expansion ends only.
48-7/8" x 1 1/2" Bolts - soft iron.
Above list of bearing plates and bolts is complete. Plates and bolts listed on Standard C-6340 not to be ordered.



LOCATION SKETCH



ESTIMATED QUANTITIES

ITEM	SUPERSTR.	BENTS	TOTALS
Excavation	Cu. Yds.	370	370
Timber Piles	Lin. Ft.	1950	1980
Pile Cut-Offs	Lin. Ft.	132	132
Concrete 1:2:3 mix Curb	12.6		12.6
Concrete 1:2:3 1/2 mix Curb	163.7		163.7
Concrete 1:2:4 mix Curb	111.4		111.4
Reinforcing Steel	Lbs.	36,730	7810

Note: Weight of bearing plates and bolts included in weight of reinforcing steel.

GENERAL NOTES

Where bitum. felt is used in expansion or partition joints in concrete, stitch felt in vertical joints securely to one face of concrete with copper wire. Concrete in hand rail to be 1:2:3 mix. Concrete in girders slabs and curbs to be 1:2:3 1/2 mix. All other concrete to be 1:2:4 mix. Exposed edges to be beveled where no other bevel is noted. Bar bill gives complete bill of reinforcing steel for hand rail and bents. See Std. C-6340 for bars S1, S2, S3, S4, S5, S6, S7, B1, B2, B3, B4, B5 & W1. Piles to be driven to sustain a load of 20 tons per pile. Omit permanent camber of 1" in each span as indicated on Std. C-6340. Any construction camber remaining in girders to be removed by thickening slab of supports. Shop drawings for fabrication of bearing plates and bolts to be furnished by the Missouri State Highway Department.

BRIDGE OVER MARLOW BRANCH

STATE ROAD FROM SHERIDAN TO GRANT CITY
ABOUT 2 MILES WEST OF GRANT CITY
PROJECT NO. R46-56 STA. 564 + 41

WORTH COUNTY
SUBMITTED BY: [Signature] DATE: 3/24/29
BRIDGE ENGINEER
APPROVED BY: [Signature] DATE: [Blank]
CHIEF ENGINEER

STD. S818

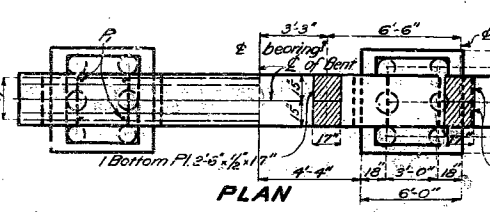
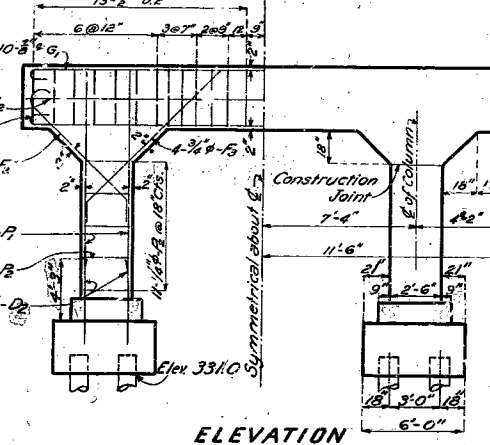
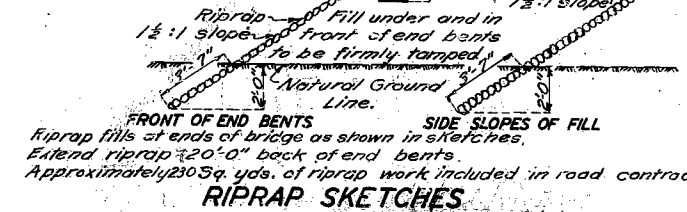
Std. C6340

J24

DETAIL SHOWING MODIFICATION OF CURB FOR OUTLETS

Ass'd Feb. 1929 By W.L.S. & R.W.D.
Ch'kd Feb. 1929 By M.W.R.
Drawn Nov. 1924 By J.A.J.
Ch'kd Dec. 1924 By J.J.

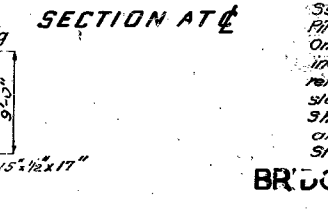
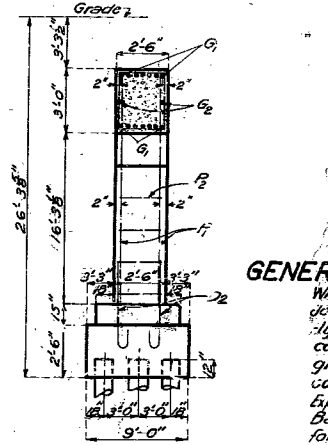
DETAILS OF END BENTS



DETAILS OF INTERMEDIATE BENTS

No. 2 & 3

Note: This drawing is not to scale. Follow dimensions.



DETAILS OF INTERMEDIATE BENTS

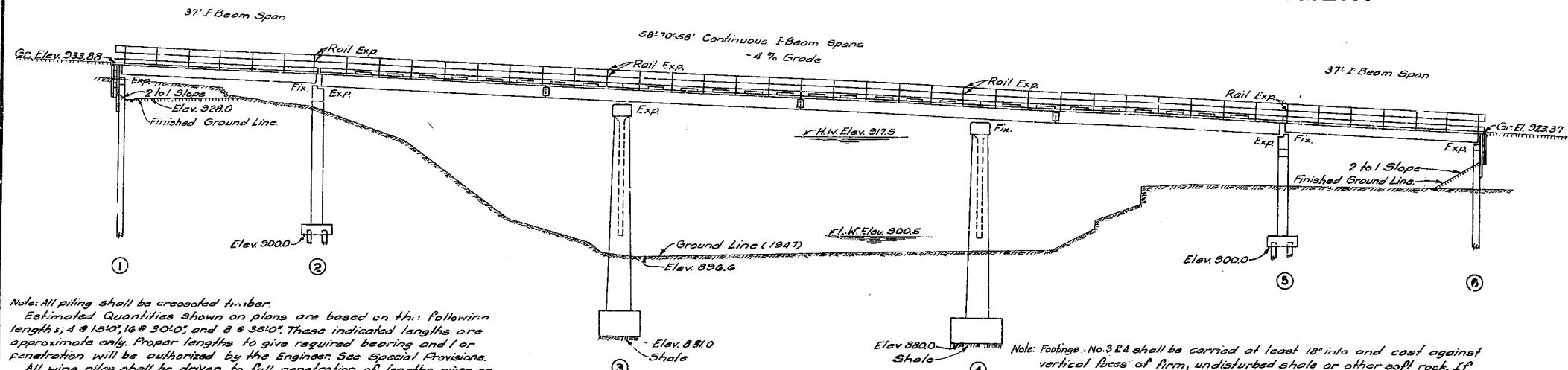
No. 2 & 3

B.M. Elev. 394.52 - 2 spikes in 18" Oak
15' L.H. of Sta. 573+85

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MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	ER-5-26 (1) (SW)	19	1	5

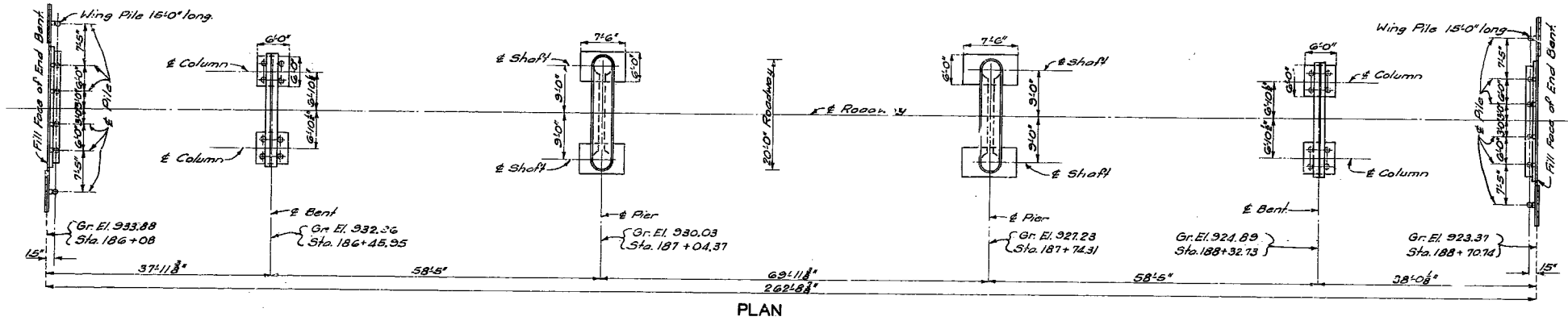
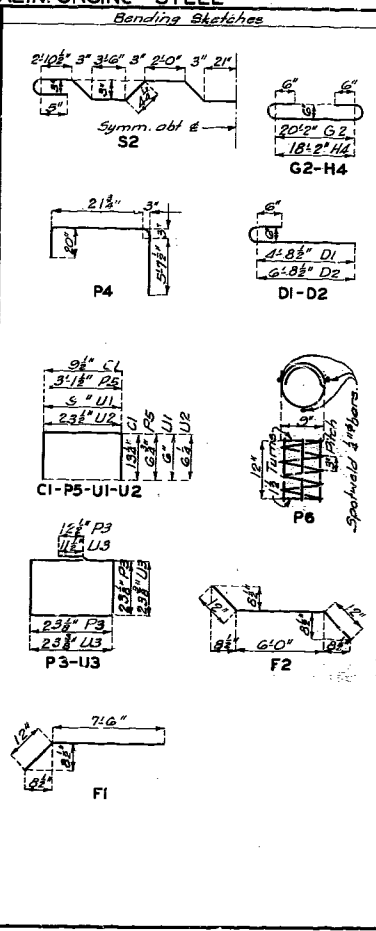


Note: All piling shall be creosoted timber.
 Estimated Quantities shown on plans are based on the following lengths: 4 @ 15'0", 16 @ 30'0", and 8 @ 35'0". These indicated lengths are approximate only. Proper lengths to give required bearing and/or penetration will be authorized by the Engineer. See Special Provisions.
 All wing piles shall be driven to full penetration of lengths given on plans. All other piles for Bents No. 1 & 6 to be driven to sustain a load of at least 15 tons per pile and with tips to at least Elev. 910.0 for Bent No. 1, and Elev. 895.0 for Bent No. 6. Piles for Bents No. 2 & 5 to be driven to sustain a load of at least 20 tons per pile and with tips to at least Elev. 890.0.
 Two timber trestle piles shall be driven, one near Bent No. 1 & one near Bt. No. 6.

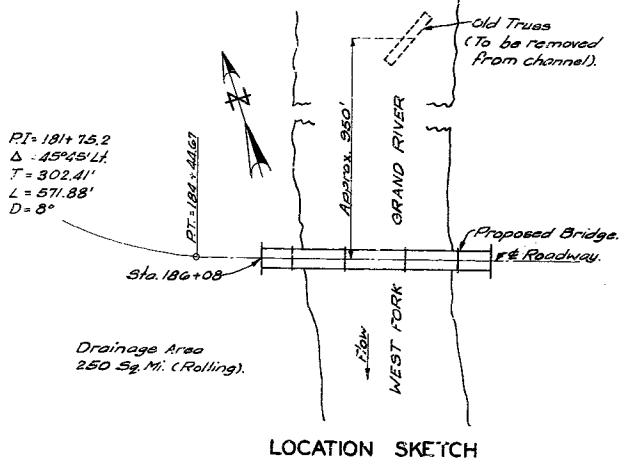
Note: Footings No. 3 & 4 shall be carried at least 18" into and cast against vertical faces of firm, undisturbed shale or other soft rock. If solid rock is encountered, all loose, shaly, or disintegrated material shall be removed and the footings placed on hard, solid, undisturbed rock.
 Excavation of all existing materials under bridge shall be made to at least Elev. 928.0 and to not less than 4'0" outside of curb lines. Payment for this excavation outside the limits of excavation for structure will be made of unit contract price for Roadway Excavation.

GENERAL ELEVATION

COMPLETE BILL OF REINFORCING STEEL			
No.	Size	Length	Location
Superstructure			
110	3/4"	3'0"	C1 Curb
24	3/4"	20'0"	C2 "
24	3/4"	30'6"	C3 "
18	3/4"	24'9"	C4 "
52	1/2"	22'0"	S1 Slab
263	1/2"	24'0"	S2 "
128	1/2"	20'0"	S3 "
26	1/2"	16'0"	S4 "
224	1/2"	28'6"	S5 "
Int. Bents No. 2 & 5			
32	3/4"	6'0"	D1 Footing
4	3/4"	20'6"	G1 Launch
20	3/4"	22'9"	G2 Cap
4	3/4"	20'6"	G3 "
16	3/4"	8'6"	F1 Haunch
16	3/4"	8'6"	F2 "
58	3/4"	21"	U1 "
16	1/2"	3'0"	U2 Beam
42	3/4"	2'9"	U3 "
16	3/4"	25'9"	P1 Col. Bt. No. 2
16	3/4"	18'9"	P2 Col. Bt. No. 5
76	3/4"	8'9"	P3 Columns
16	3/4"	19'9"	P6 Walls
Int. Piers No. 3 & 4			
32	3/4"	8'0"	D2 Footing
16	1/2"	18'0"	D3 "
8	3/4"	18'6"	H1 Cap
4	3/4"	24'0"	H2 "
42	3/4"	18'6"	H3 Web
6	1/2"	20'9"	H4 "
20	3/4"	9'6"	P4 Cap
24	3/4"	4'3"	P5 "
16	3/4"	19'9"	P6 Walls
14	3/4"	23'6"	P8 1st Pier #3
14	3/4"	20'9"	P9 Web Pier #4
16	1/2"	18'0"	P10 Col. Pier #3
16	1/2"	18'0"	P11 Col. Pier #1
16	1/2"	26'3"	P12 Col. Pier #3
16	1/2"	23'6"	P13 Col. Pier #4



PLAN



LOCATION SKETCH

GENERAL NOTES:
 Design Specifications A.A.S.H.O. 1944.
 Loading H-10-44.
 Structural Steel Stress 18,000 p.s.i.
 Reinforcing Steel Stress 18,000 p.s.i.
 Creosoted Timber Stress 1,600 p.s.i.
 Class "B" Concrete Stress 1,000 p.s.i.
 All concrete shall be Class "B".
 Where joint filler is specified on plans it shall conform with the requirements for "Prestressed Material for Filler" as given in Section 38-1940h of the Standard Specifications.
 Qualification of all welding operators and electrodes will be required in accordance with specifications, except that a proper certification of electrodes previously qualified after 1944 will be accepted.
 Paint: Shop, none; Field, contact surfaces of bolted field connections one coat of red lead and surfaces inaccessible after erection, three coats of red lead. No other paint to be applied by the Contractor. Payment for cleaning and painting such surfaces will be included in unit price bid for Fabricated Structural Steel.
 Rivets 3/8", holes 1/2" except as noted.
 All timber shall be creosoted and shall be 1600 p.s.i. Douglas Fir of the West Coast Region or either Shortleaf or Longleaf 1600 p.s.i. Southern Yellow Pine.
 All timber shall be standard sawn except as noted in timber bill for pile caps.
 All timber shall be cut to billed lengths and shapes and shall be bored as shown before treating. All backing plank are billed 6" long and are to be recut and fitted in field.

ESTIMATED QUANTITIES			
Item	Substr.	Superstr.	Total
Class 1 Excavation for Structures	240		240
Class 2 Excavation for Structures	290		290
Class "B" Concrete	181.7	127.4	309.1
Reinforcing Steel	11,550	21,750	33,300
Fabricated Structural Steel		83,200	83,200
Creosoted Timber Piles in Place	756		756
Creosoted Timber Piles Cut-off	84		84
Timber Trestle Piles	90		90
Creosoted Timber	1,955		1,955
Gray Iron by Castings		1,750	1,750
Fabricated Structural Steel (State furnished)		38,200	38,200

Note: Excavation for bridge made above Elev. 903.0 will be paid for as Class 1 Excavation for Structures.
 Excavation for bridge made below Elev. 903.0 will be paid for as Class 2 Excavation for Structures.

B.M. Elev. 924.80 - 2 Nails in N.W. Root of 12" Elm, 46' RT Sta. 186+58.
 Elev. 924.80 - Elev. 933.32 (U.S.G.S. Datum).

BRIDGE OVER WEST FORK GRAND RIVER

STATE ROAD FROM NODAWAY CO. LINE EAST
 ABOUT 4.5 MILES E. OF PARNELL
 PROJECT NO. ER-5-26(1) (SW) STA. 186+08
 WORTH COUNTY

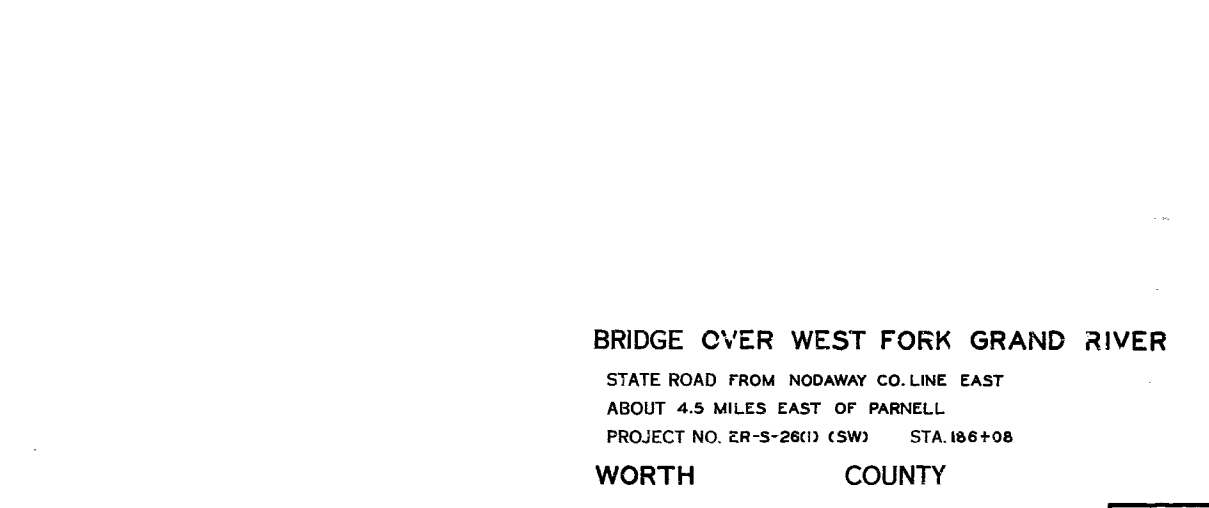
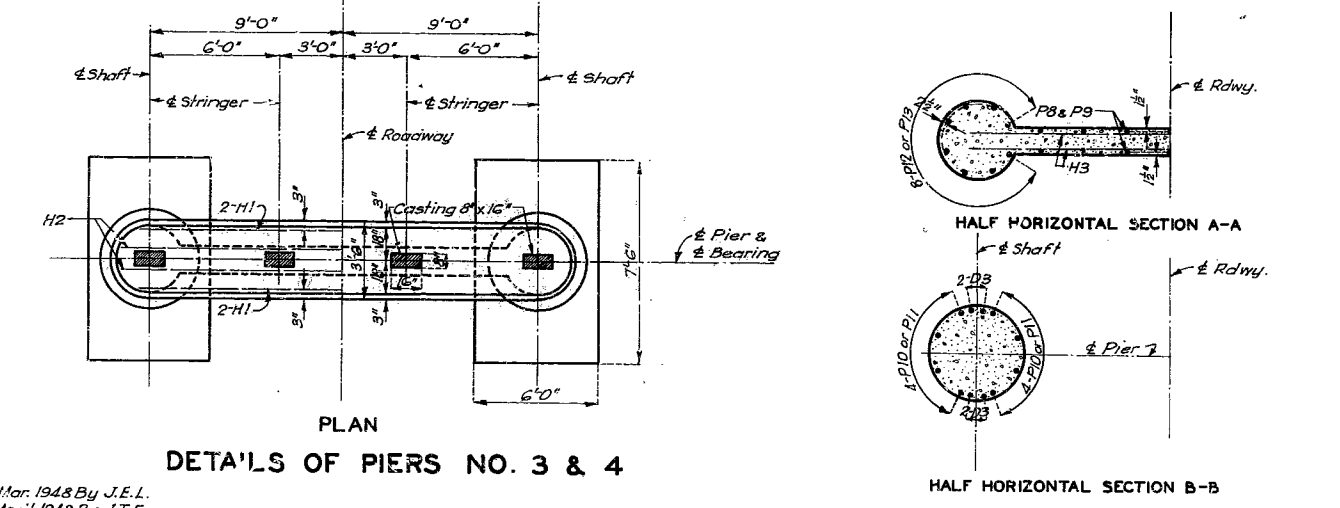
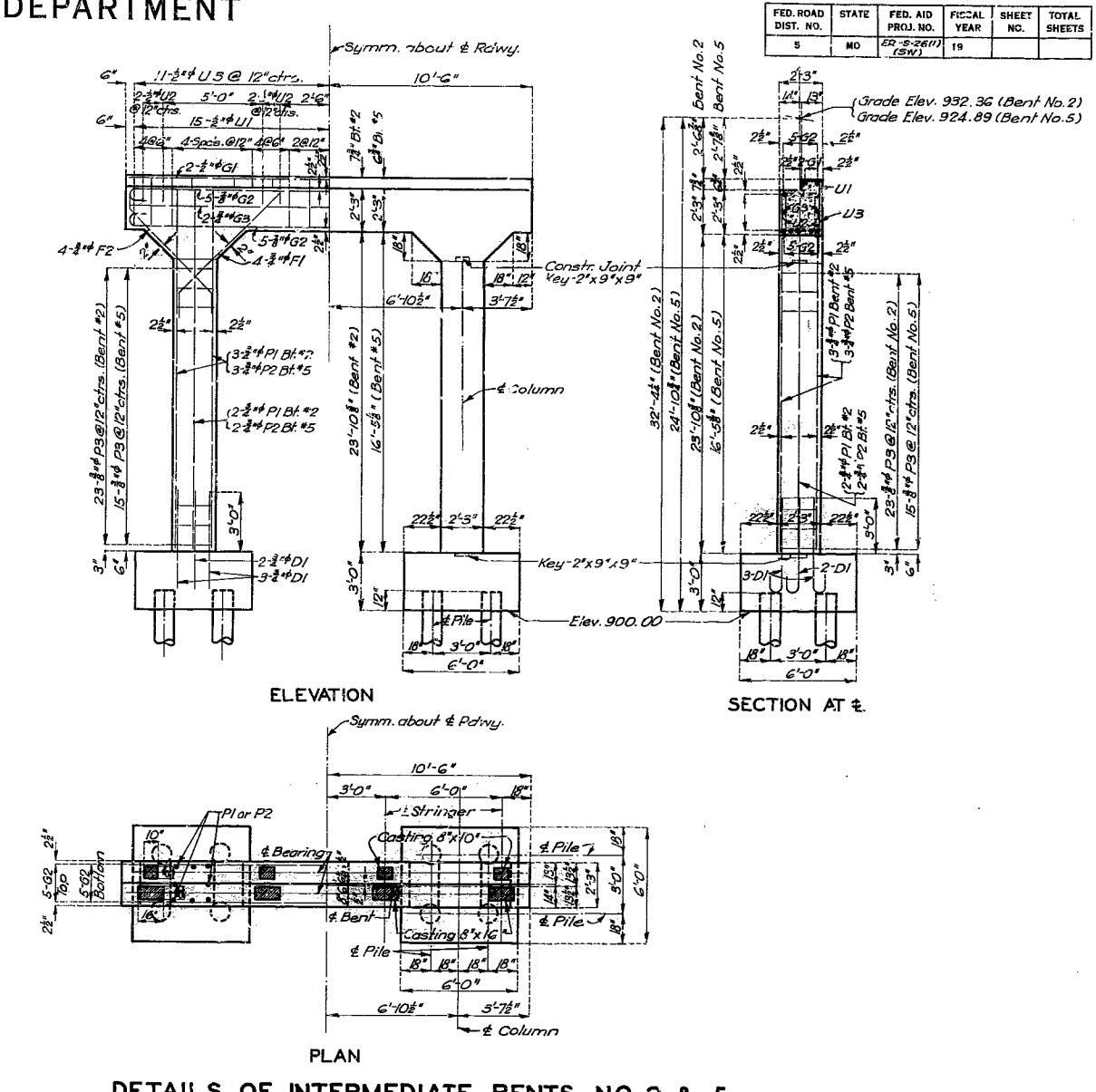
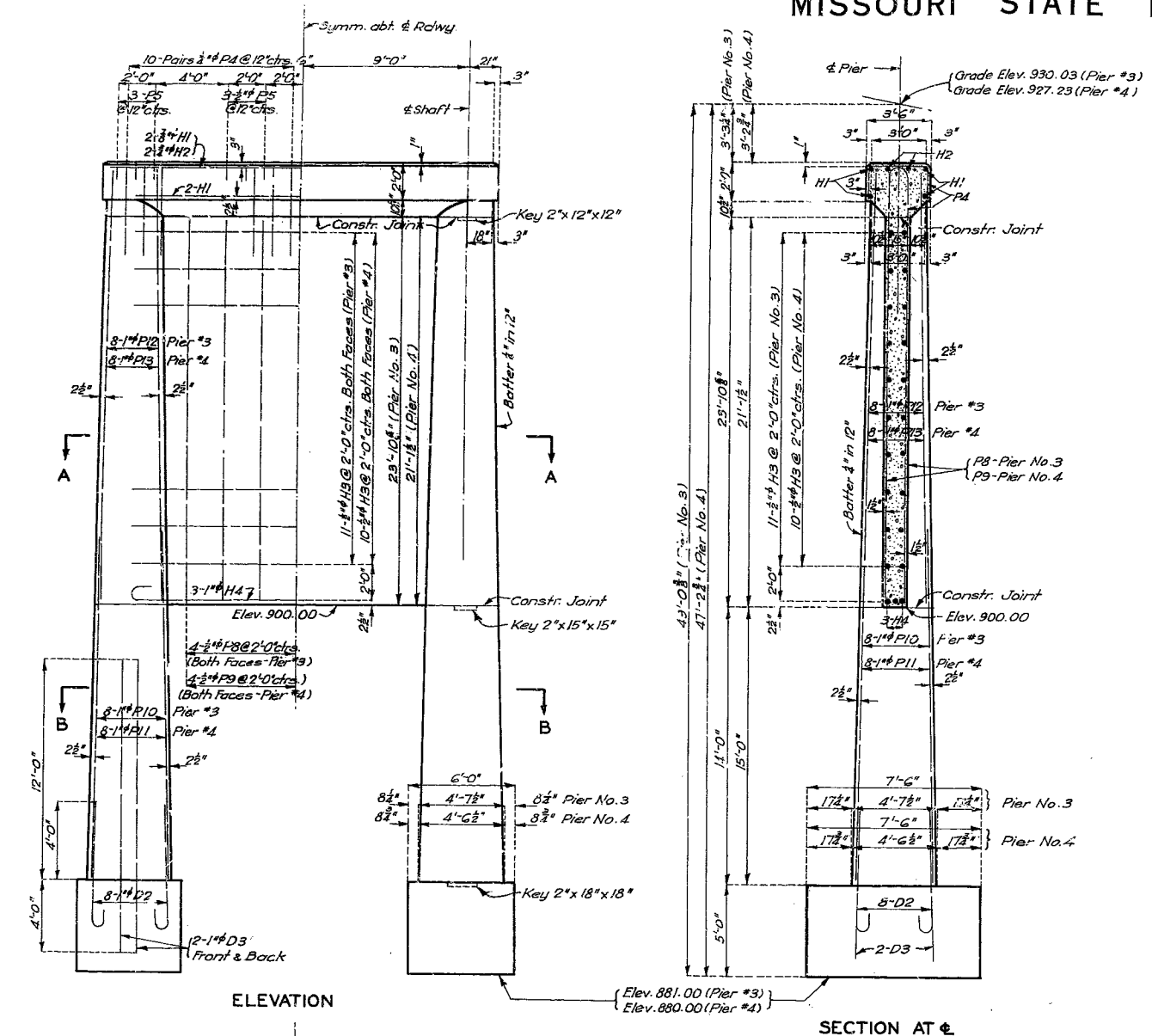
SUBMITTED BY: U.S. Engrs. DATE: 4/30/48
 APPROVED BY: Chas. Brown DATE: 4/30/48
BRIDGE ENGINEER CHIEF ENGINEER

Designed Mar. 1948 by J.E.L.
 Drawn Apr. 1948 by J.N.M.
 Traced Apr. 1948 by J.N.M.
 Checked Apr. 1948 by J.P.C.

Note: This drawing is not to scale. Follow dimensions.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	ER-5-26(1) (SW)	19		



DETAILS OF PIERS NO. 3 & 4

DETAILS OF INTERMEDIATE BENTS NO. 2 & 5

BRIDGE OVER WEST FORK GRAND RIVER
 STATE ROAD FROM NODAWAY CO. LINE EAST
 ABOUT 4.5 MILES EAST OF PARNELL
 PROJECT NO. ER-5-26(1) (SW) STA. 186+08
WORTH COUNTY

Drawn Mar. 1948 By J.E.L.
 Traced April 1948 By J.T.F.
 Checked Apr. 1948 By R.C.C.

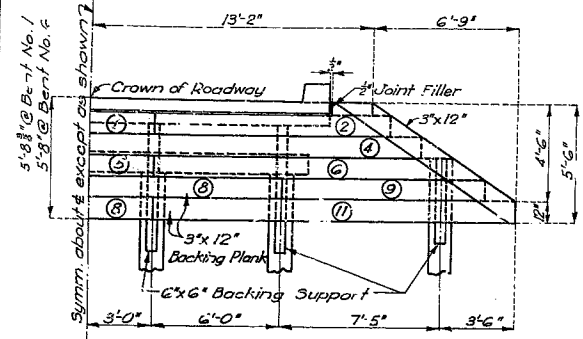
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Sheet No. 2 of 5.

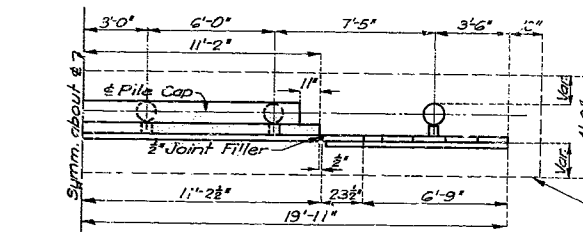
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MISSOURI STATE HIGHWAY DEPARTMENT

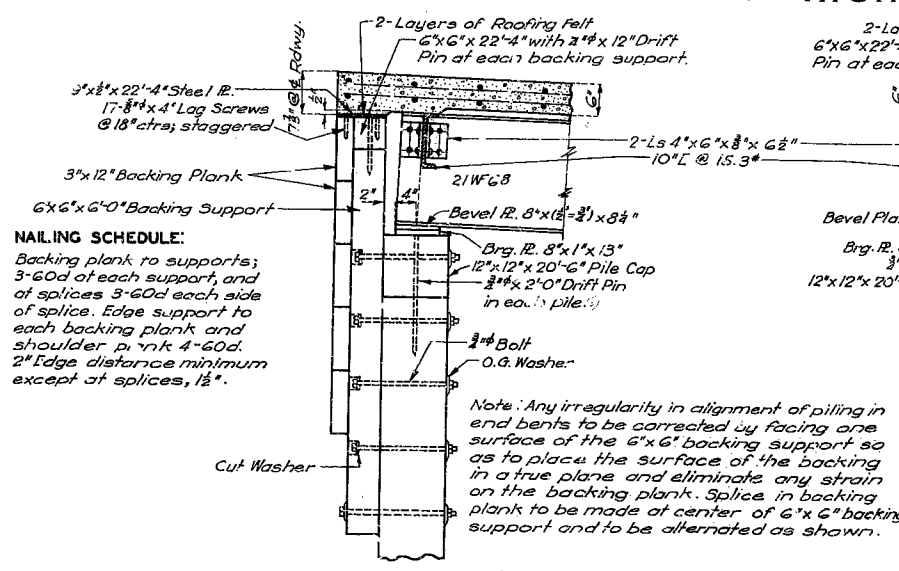
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5	MO.	ER-5-26(1) (SW)	19		



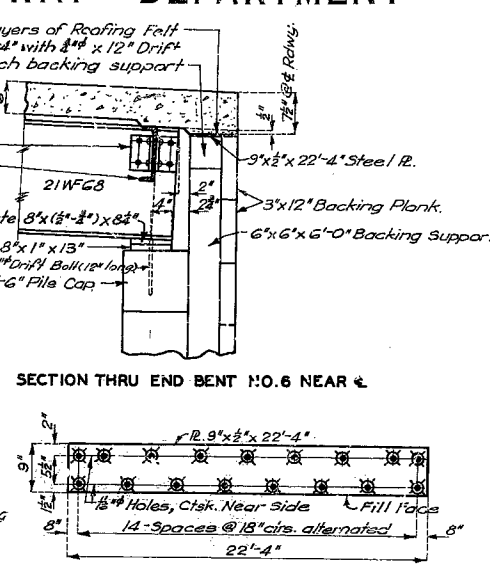
HALF ELEVATION



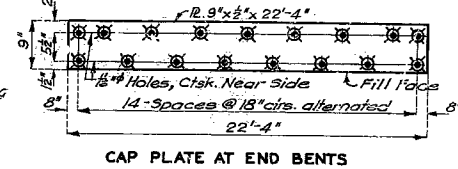
Maximum horizontal Limits of Excavation to be paid for
HALF PLAN



SECTION THRU END BENT NO.1 NEAR 4

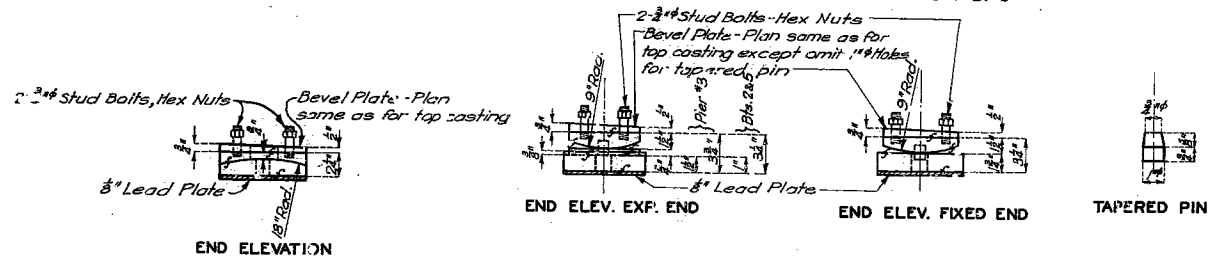


SECTION THRU END BENT NO.6 NEAR 4



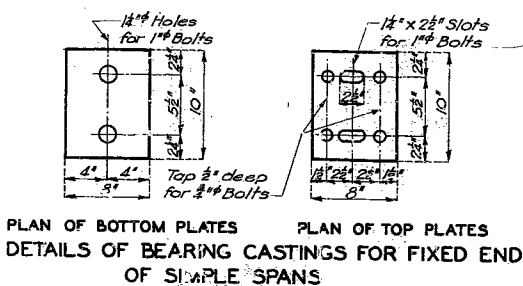
CAP PLATE AT END BENTS

DETAILS OF END BENTS NO. 1 & 6

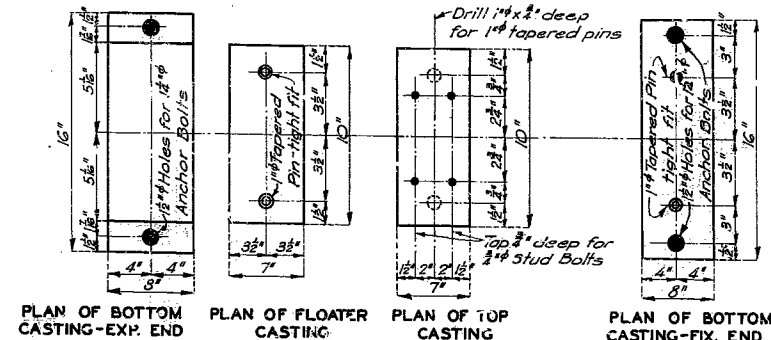


END ELEV. EXP. END END ELEV. FIXED END TAPERED PIN

PILE CUT-OFF ELEVATIONS			
Bent No.	Cut-off Elev.	Bent No.	Cut-off Elev.
Bearing Piles	930.39	Bearing Piles	919.98
Wing Piles	931.18	Wing Piles	920.70



PLAN OF BOTTOM PLATES PLAN OF TOP PLATES
DETAILS OF BEARING CASTINGS FOR FIXED END OF SIMPLE SPANS

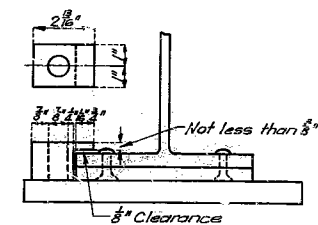


PLAN OF BOTTOM CASTING-EXP. END PLAN OF FLOATER CASTING PLAN OF TOP CASTING PLAN OF BOTTOM CASTING-FIX. END

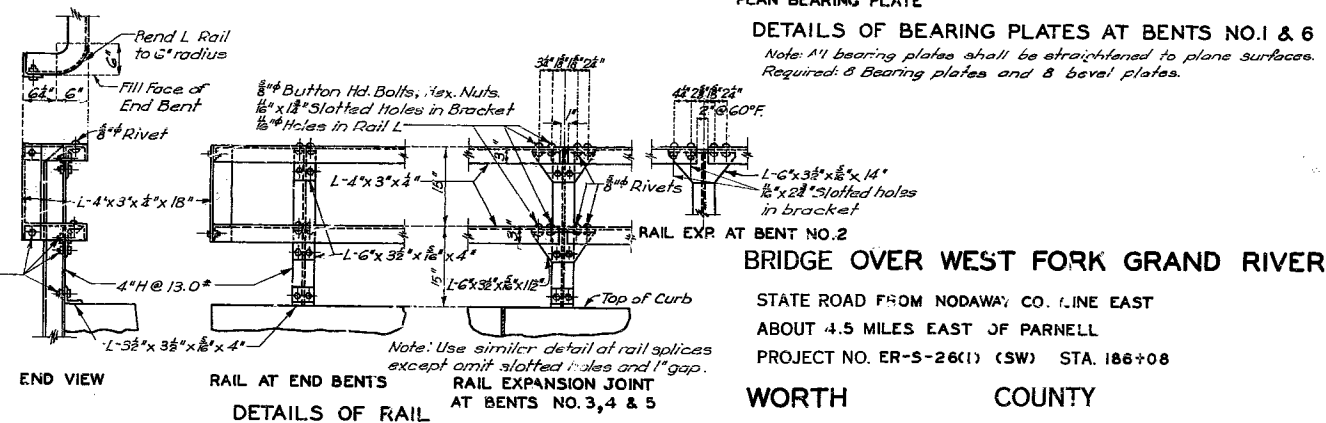
DETAILS OF BEARING CASTINGS

Note: Bearing Castings shall be either cast steel or gray iron alloy. Finish all surfaces marked X.
See Specifications for field coating.
All bolts and nuts and tapered pins shall be paid for as structural steel.
Bevel Plates may be made a part of top casting if desired, but payment will be made as fabricated structural steel.
Anchor Bolts for 8'x10' castings shall be 1" swaged bolts, no heads or nuts and are to extend 10" into concrete. Top ends of anchor bolts shall be above the top of the castings but not higher than 3" below top surface of bottom flange of beam.
Anchor Bolts for 8'x16' castings shall be 1 1/2" swaged bolts, hex nuts and shall extend 12" into concrete.
Cost of lead plates shall be included in price bid for other items.
Leaving Castings will be paid for as gray iron alloy castings.

Required: 4 Sets of Fixed Castings, 4 Sets of Expansion Castings for Pier No. 3, 8 Sets of Expansion Castings for Bents No. 2 & 5 and 16 Bevel Plates.



DETAILS OF FLANGE CLAMP AT END BENTS



END VIEW RAIL AT END BENTS RAIL EXPANSION JOINT AT BENTS NO. 3, 4 & 5

SUBSTRUCTURE TIMBER BILL				
Piece	No.	Size	Length	Remarks
Backing Plank	1	3x12	17'-5"	Cut to length
"	2	3x12	11'-5"	"
"	3	3x12	12'-11"	"
"	4	3x12	18'-11"	"
"	5	3x12	20'-5"	"
"	6	3x12	14'-5"	"
"	7	3x12	15'-11"	"
"	8	3x12	12'-6"	"
"	9	3x12	9'-11"	"
"	10	3x12	11'-5"	"
"	11	3x12	17'-5"	"
Shoulder Plank	4	3x6	23'	"
Edge Support	4	3x12	10'-2"	Cut to length & shape
Backing Support	8	6x6	6'-0"	"
"	4	6x6	4'-0"	"
Backing Support Cap	2	6x6	22'-3"	Cut to length
Pile Cap	2	12x12	20'-6"	"

Note: Pile caps to be classified as "Beams and Stringers". All other timber to be classified as "Joists and Plank". *S25 to exact depth of 11 1/2".

Drawn April 1948 By J.E.L.
Traced April 1948 By J.T.F.
Checked Apr. 1948 By J.P.C.

Note: This drawing is not to scale. Follow dimensions.

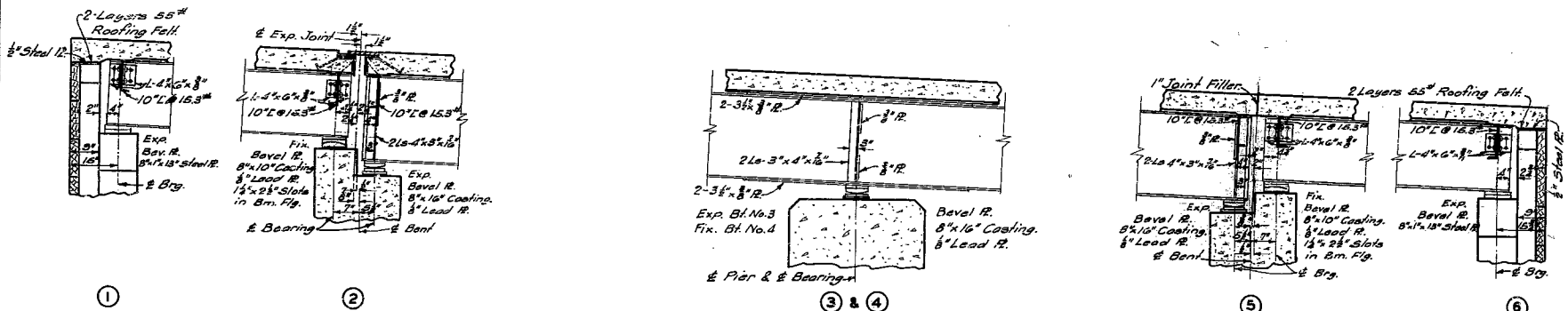
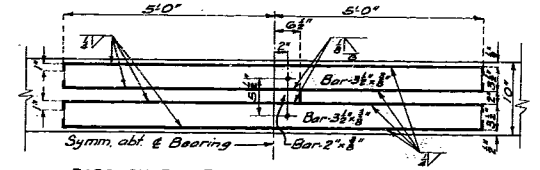
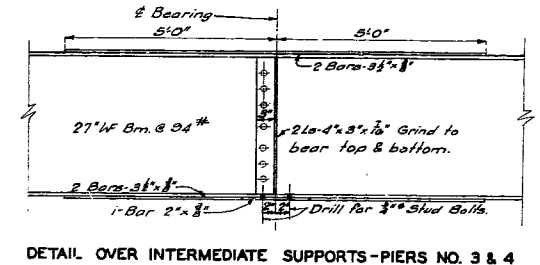
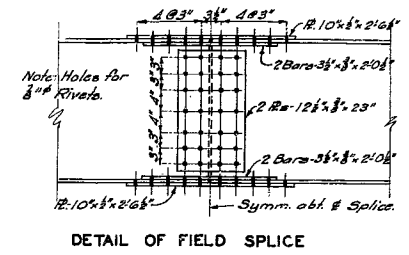
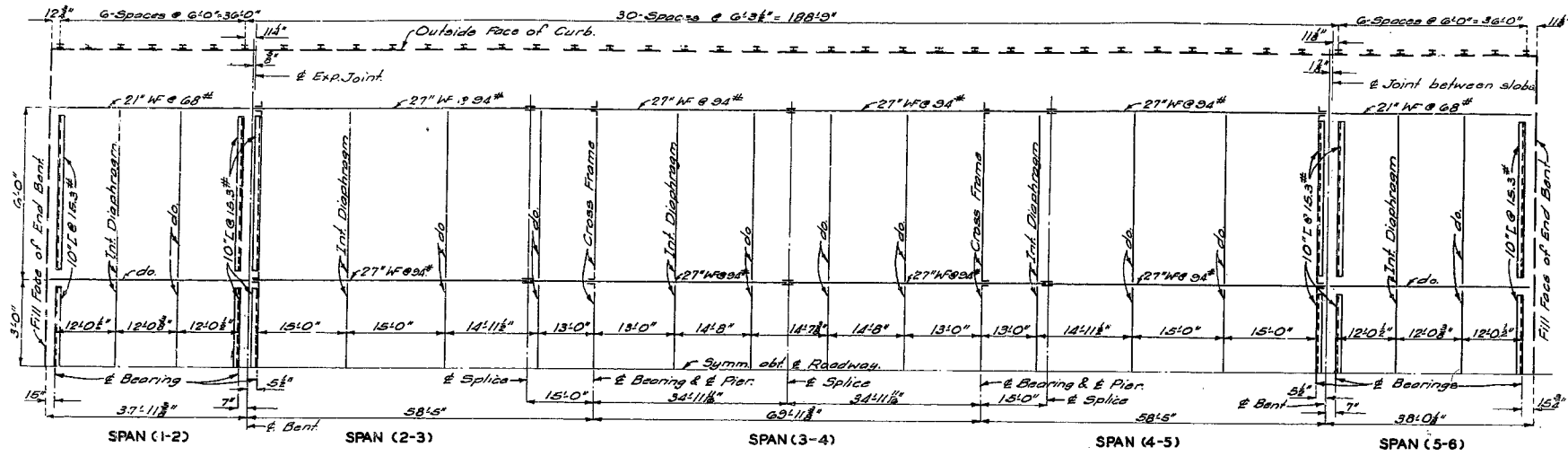
Sheet No. 3 of 5.

X-142

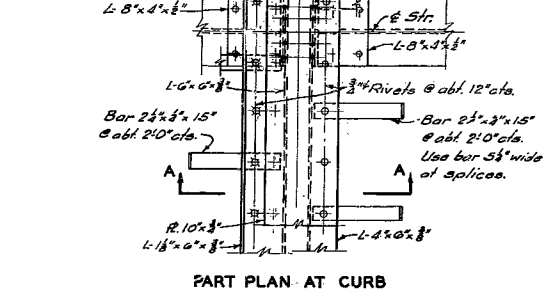
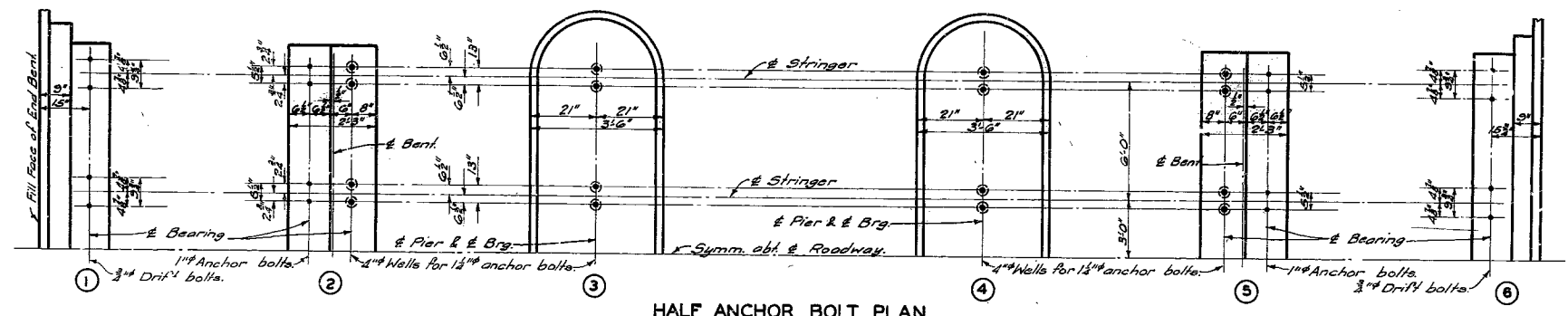
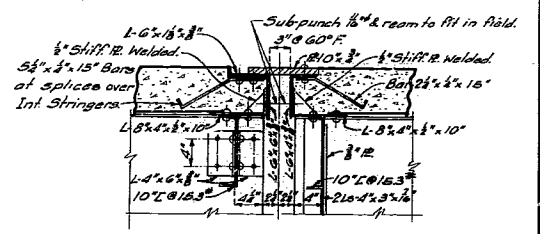
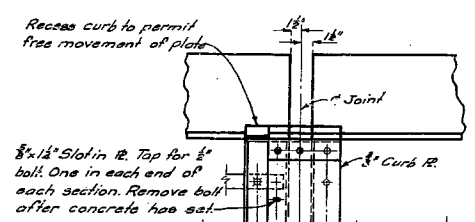
BRIDGE OVER WEST FORK GRAND RIVER
STATE ROAD FROM NODAWAY CO. LINE EAST ABOUT 4.5 MILES EAST OF PARNELL
PROJECT NO. ER-5-26(1) (SW) STA. 186+08
WORTH COUNTY

MISSOURI STATE HIGHWAY DEPARTMENT

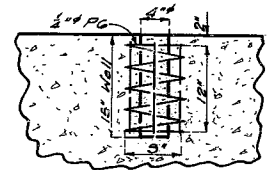
FED. ROAD DIST. NO.	STATE NO.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5		ER-S-26 (1) (SW)	19		



Note: All stiffener angles to be ground to bear top and bottom.



DETAILS OF EXPANSION DEVICE - BENT NO. 2



Note: Holes for all 1 1/2" anchor bolts shall be formed in substructure by placing and setting with template. 4" walls of depth shown above.

Grout for anchor bolts shall be of Iron Oxide Cement. (Embase or an approved equivalent).

PART SECTION SHOWING ANCHOR BOLT WELL

BRIDGE OVER WEST FORK GRAND RIVER

STATE ROAD FROM NODAWAY CO. LINE EAST
ABOUT 4.5 MILES E. OF PARNELL
PROJECT NO. ER-S-26 (1) (SW) STA. 186 + 08

WORTH COUNTY

Designed Mar. 1948 by J.E.L.
Drawn Mar. 1948 by J.N.N.
Traced Mar. 1948 by J.N.N.
Checked Apr. 1948 by O.R.C.

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 5.

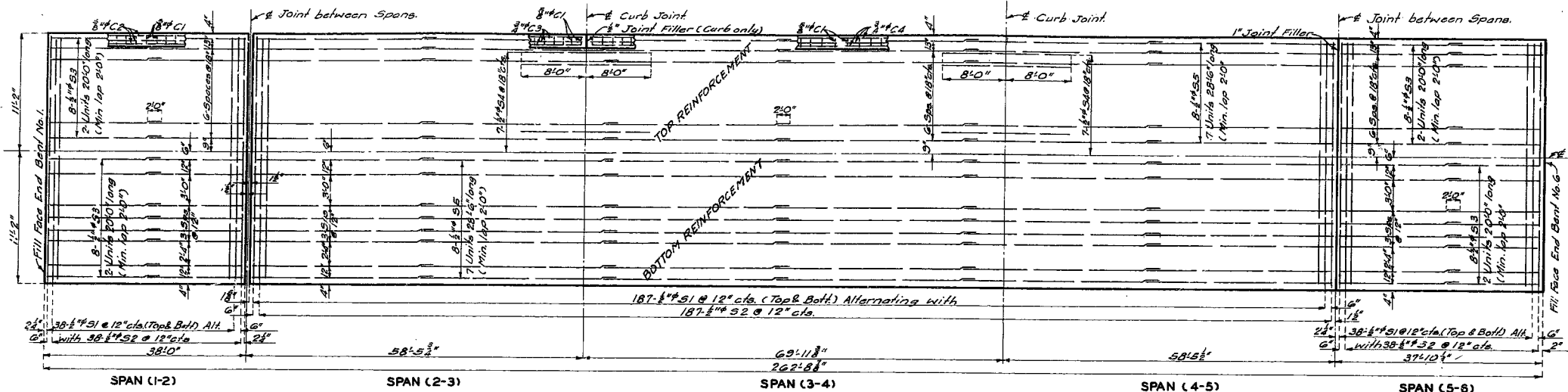
X-142

Rev. Sept. 14, 1948

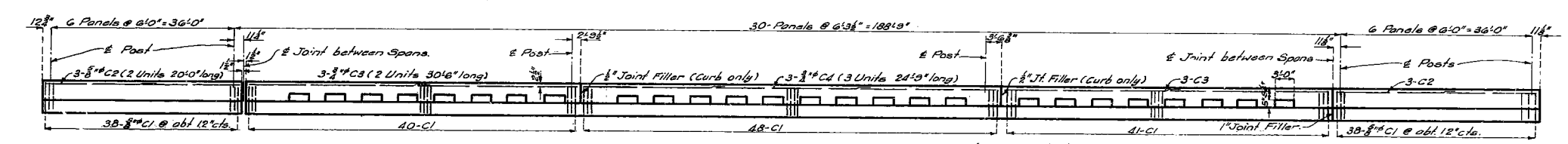
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MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	ER-5-26 (1) (SW)	19	1	5



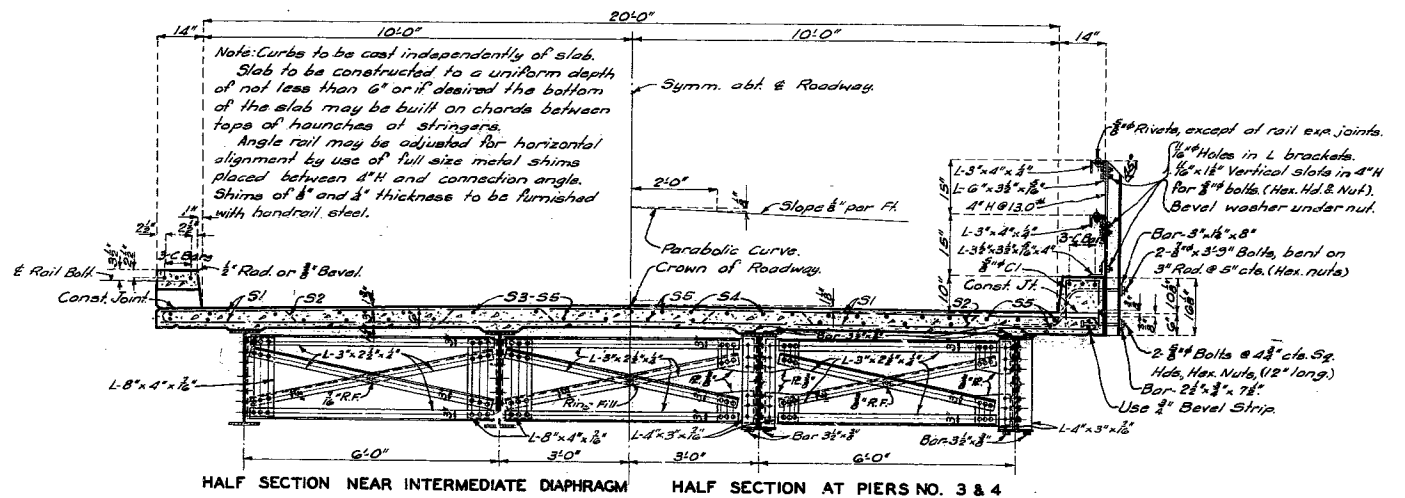
PLAN OF SLAB SHOWING REINFORCING



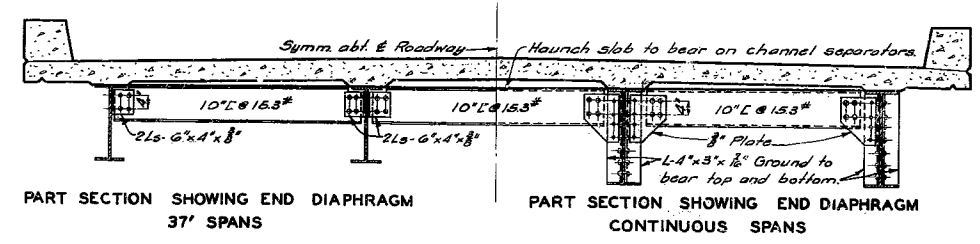
ELEVATION OF CURB

Note: Omit curb outlets in both end spans and in one rail panel over each intermediate bent and pier. Outlets shall be centered between rail posts.

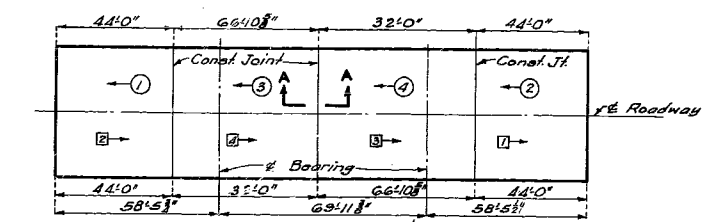
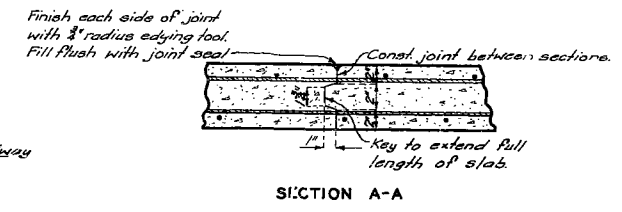
Note: CI Bars to be spaced @ abt. 12" c/c, between outlets and at ends of spans.



HALF SECTION NEAR INTERMEDIATE DIAPHRAGM HALF SECTION AT PIERS NO. 3 & 4

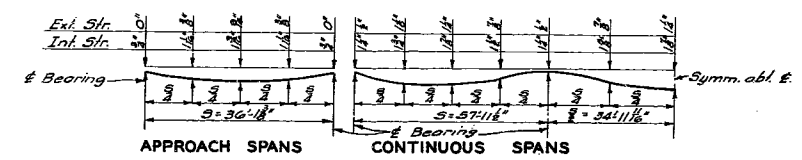


PART SECTION SHOWING END DIAPHRAGM 37' SPANS PART SECTION SHOWING END DIAPHRAGM CONTINUOUS SPANS



Note: Slab shall be poured in sections of size shown and in the sequence indicated by the numbers ①, ②, ③, & ④ or as an alternate by the numbers ⑤, ⑥, ⑦, & ⑧. The separate pours shall also progress in the direction indicated by the arrows. Longitudinal construction joints will not be permitted.

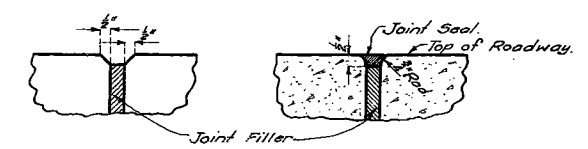
SLAB POURING SEQUENCE FOR CONTINUOUS SPANS



APPROACH SPANS CONTINUOUS SPANS

Note: Slab shall be built parallel to grade and to a uniform thickness of 6". Dead load deflection and crown shall be taken care of by haunching to stringers by the amounts shown above. This additional concrete is included in "Estimated Quantities".

SLAB HAUNCHING DIAGRAM



Note: Use bevel as shown for exposed faces of all filled joints except at top surface of roadway slab. Use edging tool with 3/8" radius at top surface of roadway slab each side of joint and fill flush with joint seal as shown.

DETAILS OF BEVEL FOR FILLED JOINTS

BRIDGE OVER WEST FORK GRAND RIVER

STATE ROAD FROM NODAWAY CO. LINE EAST
ABOUT 4.5 MILES E. OF PARNELL
PROJECT NO. ER-5-26 (1) (SW) STA. 166+08

WORTH COUNTY

Designed Mar. 1948 by J.E.L.
Drawn Mar. 1948 by J.M.N.
Traced Apr. 1948 by J.M.N.
Checked Apr. 1948 by W.P.P.C.

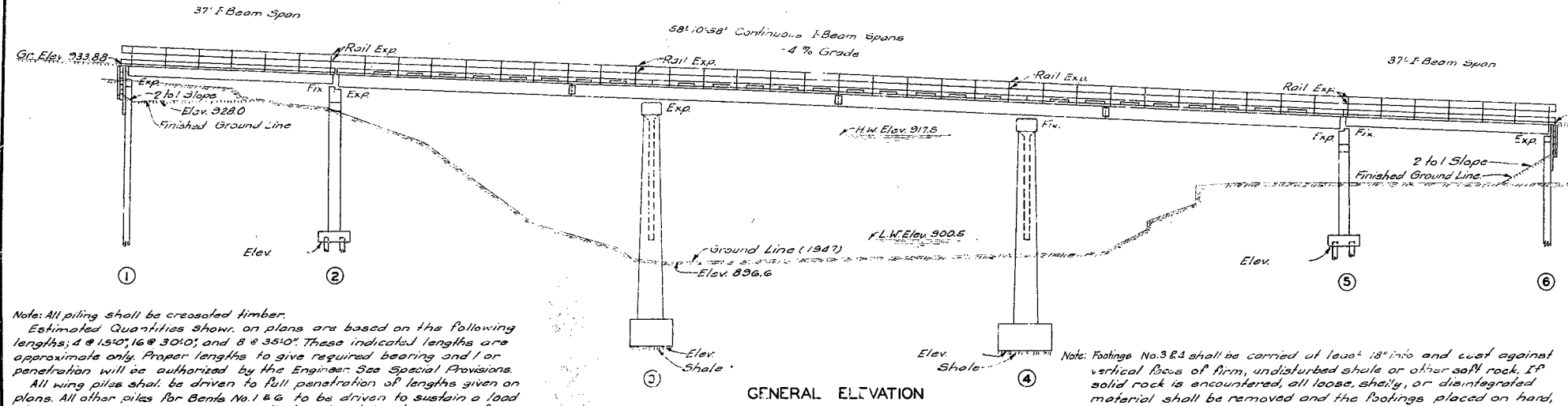
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 5 of 5.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	4R-26 (1) (SW)	19	24	31

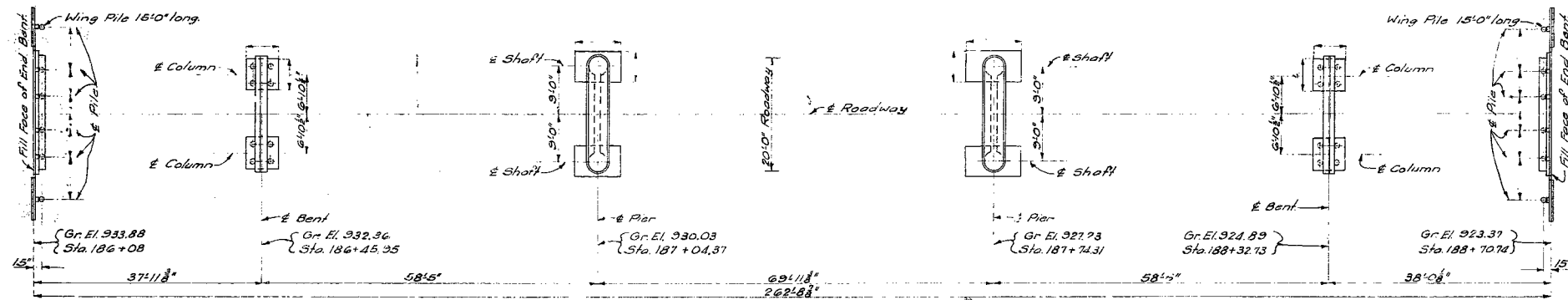
FINAL PLANS



Note: All piling shall be creosoted timber.
 Estimated Quantities shown on plans are based on the following lengths, 4 @ 15'-0", 16 @ 30'-0", and 8 @ 35'-0". These indicated lengths are approximate only. Proper lengths to give required bearing and/or penetration will be authorized by the Engineer. See Special Provisions.
 All wing piles shall be driven to full penetration of lengths given on plans. All other piles for Bents No. 1 & 6 to be driven to sustain a load of at least 15 ton per pile and with tips to at least Elev. 910.0 for Bent No. 1, and Elev. 895.0 for Bent No. 6. Piles for Bents No. 2 & 5 to be driven to sustain a load of at least 20 ton per pile and with tips to at least Elev. 890.0.
 Two timber test piles shall be driven, one near Bent No. 1 & one near B. No. 6.

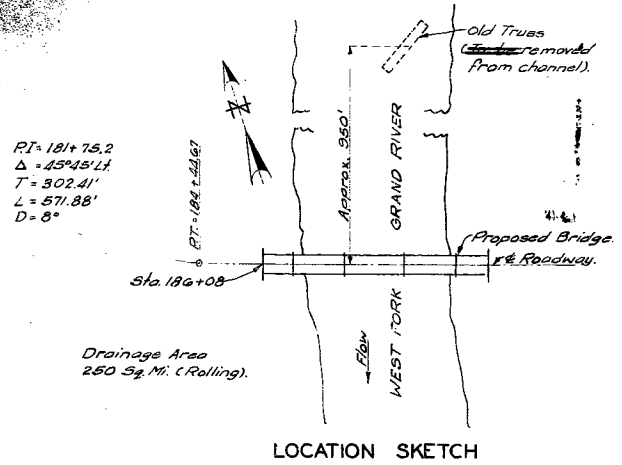
Note: Footings No. 3 & 4 shall be carried at least 18" into and cast against vertical face of firm, undisturbed shale or other soft rock. If solid rock is encountered, all loose, shaly, or disintegrated material shall be removed and the footings placed on hard, solid, undisturbed rock.
 Excavation of all existing materials under bridge shall be made to at least Elev. 928.0 and to not less than 1'-0" outside of curb lines. Payment for this excavation outside the limits of excavation for structure will be made at unit contract price for Roadway Excavation.

GENERAL ELEVATION



PLAN

COMPLETE BILL OF REINFORCING STEEL					Bending Sketches	
No.	Size	Length	Mark	Location		
Superstructure						
110	3/4"	3'-0"	C1	Curb	2'-0" 3' 3'-0" 5' 2'-0" 3' 2'	
21	3/4"	20'-0"	C2	"	Symm abt E	
24	3/4"	30'-6"	C3	"	20'-0" G2	
18	3/4"	21'-9"	C4	"	18'-0" H4	
Abutments						
52a	3/4"	22'-0"	S1	Slab	G2-H4	
263	3/4"	24'-0"	S2	"	2'-0" 2'-0"	
128	3/4"	20'-0"	S3	"	2'-0" 2'-0"	
26	3/4"	16'-0"	S4	"	2'-0" 2'-0"	
224	3/4"	28'-0"	S5	"	2'-0" 2'-0"	
Int. Bents No. 2 & 5						
32	3/4"	4'-0"	D1	Footing	2'-0" 2'-0"	
4	3/4"	20'-0"	G1	Haunch	4'-8" D1	
20	3/4"	22'-0"	G2	Cap	6'-8" D2	
4	3/4"	20'-0"	G3	"	6'-8" D2	
16	3/4"	8'-6"	F1	Haunch	9'-0" CL	
16	3/4"	8'-0"	F2	"	3'-0" P2	
38	3/4"	21'	U1	"	9'-0" U1	
16	3/4"	3'-0"	U2	Beam	2'-3" U2	
32	3/4"	8'-9"	U3	"	1'-5" U1	
16	3/4"	25'-9"	P1	Col. B1 No. 2	1'-5" U1	
16	3/4"	18'-3"	P2	Col. B1 No. 5	1'-5" U1	
76	3/4"	8'-3"	P3	Columns	1'-5" U1	
16	3/4"	19'-9"	P5	Wells	1'-5" U1	
Int. Piers No. 3 & 4						
32	1/2"	8'-0"	D2	Footing	2'-0" 2'-0"	
16	1/2"	16'-0"	D3	"	2'-0" 2'-0"	
8	3/4"	18'-0"	H1	Cap	2'-0" 2'-0"	
4	3/4"	24'-0"	H2	"	2'-0" 2'-0"	
42	1/2"	18'-0"	H3	Web	2'-0" 2'-0"	
6	1/2"	20'-9"	H4	"	2'-0" 2'-0"	
10	3/4"	9'-0"	P4	Cap	2'-0" 2'-0"	
24	1/2"	11'-3"	P5	"	2'-0" 2'-0"	
16	1/2"	19'-9"	P6	Wells	2'-0" 2'-0"	
14	3/4"	23'-0"	P8	Web Pier #3	2'-0" 2'-0"	
12	3/4"	20'-9"	P9	Web Pier #1	2'-0" 2'-0"	
16	1/2"	18'-0"	P10	Col. Pier #3	2'-0" 2'-0"	
16	1/2"	18'-0"	P11	Col. Pier #1	2'-0" 2'-0"	
16	1/2"	26'-3"	P12	Col. Pier #3	2'-0" 2'-0"	
16	1/2"	23'-6"	P13	Col. Pier #1	2'-0" 2'-0"	



LOCATION SKETCH

GENERAL NOTES:
 Design Specifications - A.A.S.H.O. 1944.
 Loading K-10-44.
 Structural Steel Stress 18,000 p.s.i.
 Reinforcing Steel Stress 18,000 p.s.i.
 Creosoted Timber Stress 1,600 p.s.i.
 Class "B" Concrete Stress 1,000 p.s.i.
 All concrete shall be Class "B".
 Where joint filler is specified on plans it shall conform with the requirements for "Prestressed Material for Filler" as given in Section 38-1940h of the Standard Specifications.
 Qualification of all welding operators and electrodes will be required in accordance with specifications, except that a proper certification of electrodes previously qualified after 1944 will be accepted.
 Paint: Shop, none; Field, contact surfaces of bolted field connections one coat of red lead and surfaces inaccessible after erection, three coats of red lead. No other paint to be applied by the Contractor. Payment for cleaning and painting such surfaces will be included in unit price bid for Fabricated Structural Steel.
 Rivets 3/4", holes 1/2" except as noted.
 All timber shall be creosoted and shall be 1000' Douglas Fir of the West Coast Region or either Shortleaf or Longleaf 1600' Southern Yellow Pine.
 All timber shall be standard sawn except as noted in timber bill for pile caps.
 All timber shall be cut to billed lengths and shapes and shall be bored as shown before treating. All backing plank are billed 6" long and are to be recut and fitted in field.

FINAL QUANTITIES			
Item	Substr.	Superstr.	Total
Class 1 Excavation for Structures	Cu. Yds.	229.0	229.0
Class 2 Excavation for Structures	Cu. Yds.	298.5	298.5
Class "B" Concrete	Cu. Yds.	181.7	127.4
Reinforcing Steel	Lbs.	11,350	21,750
Fabricated Structural Steel	Lbs.		84,360
Creosoted Timber Piles in Place	Lin. Ft.	583	583
Creosoted Timber Piles Cut-off	Lin. Ft.	175	175
Timber Test Piles	Lin. Ft.	90	90
Creosoted Timber	F.B.M.	19.55	19.55
Grey Iron Alloy Castings	Lbs.		1750
Fabricated Structural Steel (State Furnish)	Lbs.		36,200
Drilling 7" Test Holes at Piers #3 & 4. 4x7x125'			35.00
Deduct Vertical Haunch to Beams		967.50 @ 90.10	96.75

Note: Excavation for bridge made above Elev. 903.0 will be paid for as Class 1 Excavation for Structures.
 Excavation for bridge made below Elev. 903.0 will be paid for as Class 2 Excavation for Structures.

B.M. Elev. 924.80 - 2 Nails in N.W. Root of 12" Elm, 4' 6" Rt. Sta. 186+58.
 Elev. 924.80 = Elev. 933.32 (U.S.G.S. Datum).

BRIDGE OVER WEST FORK GRAND RIVER
 STATE ROAD FROM NODAWAY CO. LINE EAST
 ABOUT 4.5 MILES E. OF PARNELL
 PROJECT NO. ER-S-26(1) (SW) STA. 186+08
WORTH COUNTY

SUBMITTED BY *U.W. Carroll* DATE 4/30/48
 BRIDGE ENGINEER
 APPROVED BY *C.W. Brown* DATE 4/30/48
 CHIEF ENGINEER

STD. C-110 R3
X-142

FINAL PLANS

Sheet No. 1A of 2

Note: This drawing is not to scale. Follow dimensions.

Designed Mar. 1948 by J.E.L.
 Drawn Apr. 1948 by J.N.N.
 Traced Apr. 1948 by J.N.N.
 Checked Apr. 1948 by M.K.C.

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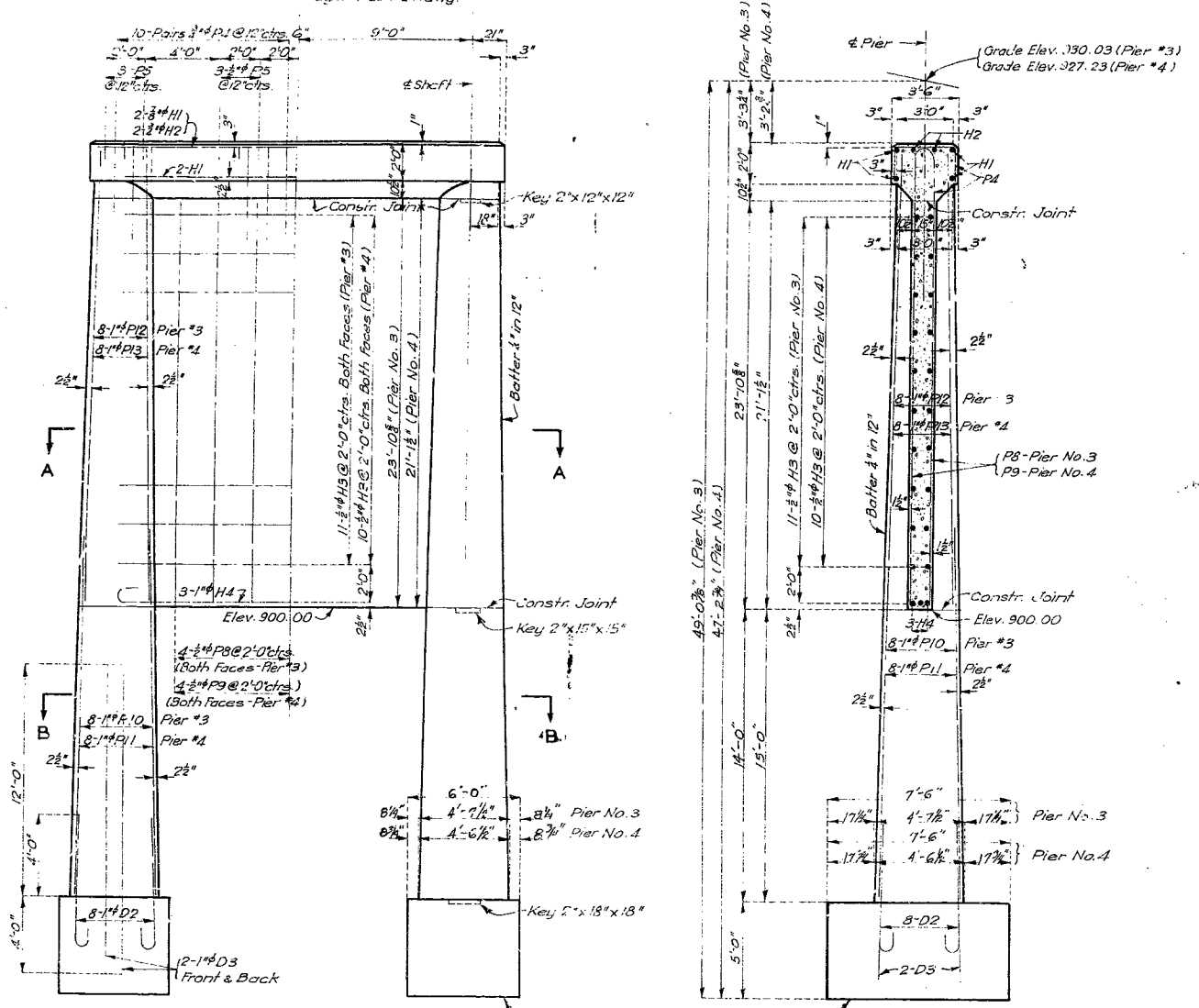
MISSOURI STATE HIGHWAY DEPARTMENT

FINAL PLANS

FED. ROAD DIST. NO.	STAT.	FED. AID DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MU	ER-5-26(1)	1948	25	31

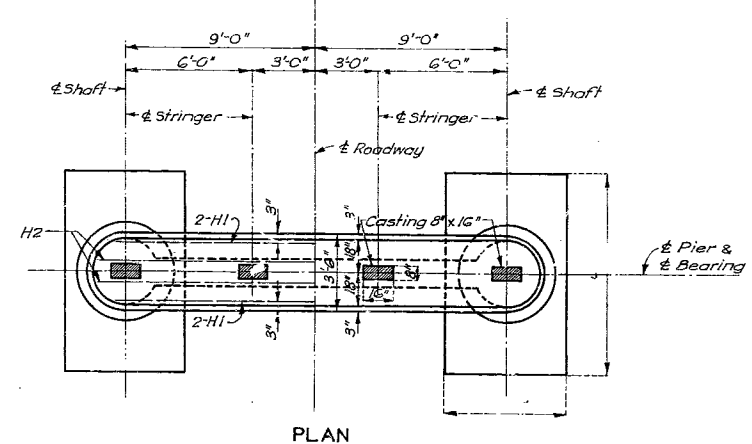
FINAL PLANS

(Grade Elev. 932.36 (Bent No. 2)
Grade Elev. 924.89 (Bent No. 5))



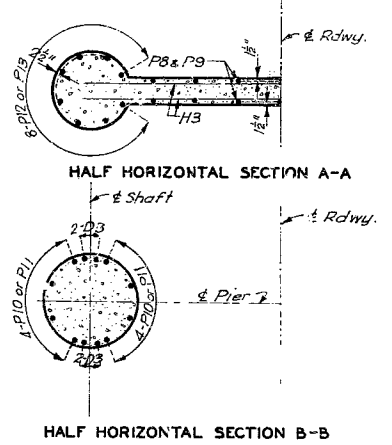
ELEVATION

SECTION AT C



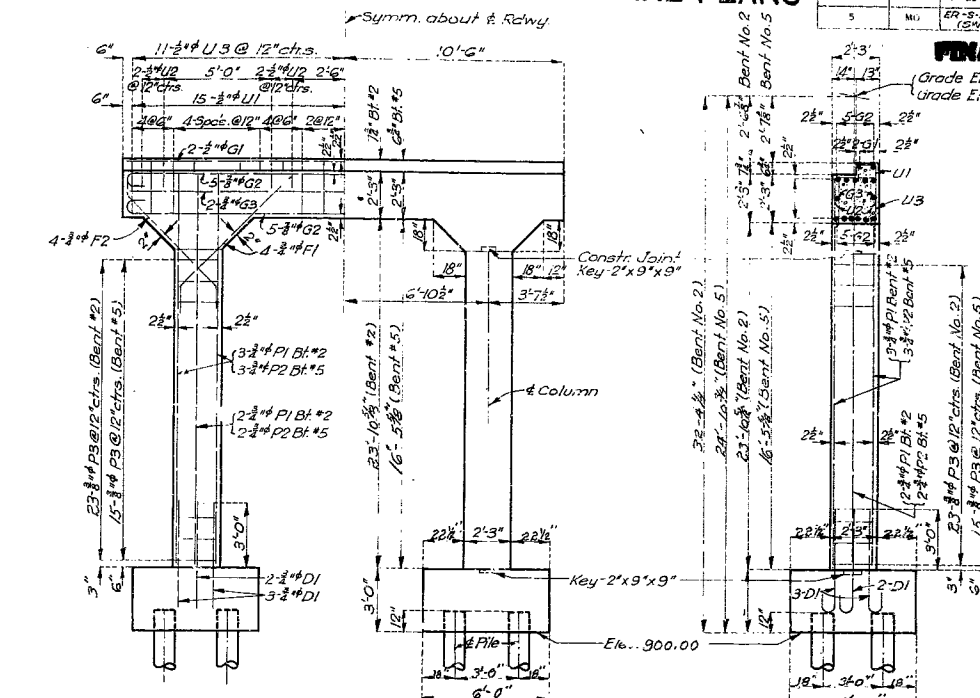
PLAN

DETAILS OF PIERS NO. 3 & 4



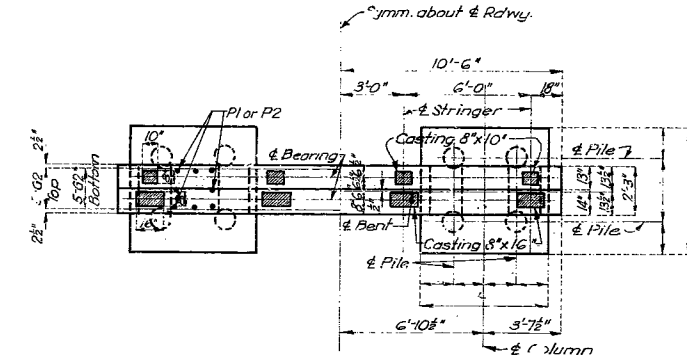
HALF HORIZONTAL SECTION A-A

HALF HORIZONTAL SECTION B-B



ELEVATION

SECTION AT E



PLAN

DETAILS OF INTERMEDIATE BENTS NO. 2 & 5

Drawn Mar. 1948 By J.E.L.
Traced April 1948 By J.T.F.
Checked Apr. 1948 By R.K.C.

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2A of 2

BRIDGE OVER WEST FORK GRAND RIVER
STATE ROAD FROM NODAWAY CO. LINE EAST
ABOUT 4.5 MILES EAST OF PARNELL
PROJECT NO. ER-5-26(1) (SW) STA. 186+08
WORTH COUNTY



FINAL PLANS

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